

RECEIVED

JUL 31 2003

TECH CENTER

1600

RAW SEQUENCE LISTING

DATE: 07/25/2003

PATENT APPLICATION: US/09/820,003C

TIME: 14:45:29

Input Set : A:\1196 3RD SUBST SEQLIST 20030718.TXT

Output Set: N:\CRF4\07252003\I820003C.raw

4 <110> APPLICANT: MERKULOV, Gennady et al.
 6 <120> TITLE OF INVENTION: ISOLATED HUMAN RAS-LIKE PROTEINS,
 7 NUCLEIC ACID MOLECULES ENCODING THESE HUMAN RAS-LIKE
 8 PROTEINS, AND USES THEREOF
 10 <130> FILE REFERENCE: CL001196
 12 <140> CURRENT APPLICATION NUMBER: 09/820,003C
 13 <141> CURRENT FILING DATE: 2001-03-29
 15 <160> NUMBER OF SEQ ID NOS: 45
 17 <170> SOFTWARE: FastSEQ for Windows Version 4.0
 19 <210> SEQ ID NO: 1
 20 <211> LENGTH: 1405
 21 <212> TYPE: DNA
 22 <213> ORGANISM: Homo sapiens
 24 <400> SEQUENCE: 1

25 aagcgatagc tgagtgcggc ggctgctgat tgtgttctag gggacggagt aggggaagac 60
 26 gtttgctctc ccggaacagc ctatctcatt cctttctttc gattaccgtt ggcgcggaga 120
 27 gtcagggcgg cggtgcggc agcaagggcg gcggtggcgg cggcggcagc tgcagtga 180
 28 tgtccagcat gaatcccgaa tatgattatt tattcaagtt acttctgatt ggcgactcag 240
 29 ggggtggaaa gtcttgccct cttcttaggt ttgcagatga tacatataca gaaagctaca 300
 30 tcagcacaaat tgggtgtgat ttcaaaataa gaactataga gttagacggg aaaacaatca 360
 31 agcttcaaat agagtccttc aataatgtta aacagtggtt gcaggaaata gatcgttatg 420
 32 ccagtgaaaa tgtcaacaaa ttgttggttag ggaacaaatg tgatctgacc acaaagaaa 480
 33 tagtagacta cacaacagcg aaggaatttg ctgattccct tgggaattccg tttttggaaa 540
 34 ccagtgtctaa gaatgcaacg aatgtagaac agtcctttcat gacgatggca gctgagatta 600
 35 aaaagcgaat ggggtcccgga gcaacagctg gtggtgctga gaagtccaat gttaaaattc 660
 36 agagcactcc agtcaagcag tcaggtggag gttgctgcta aaatttgctt ccattcctttt 720
 37 ctacacgcaa tgaatttgca atctgaaccc aagtgaaaaa acaaaattgc ctgaattgta 780
 38 ctgtatgtag ctgcactaca acagattcct accgtctcca caaaggtcag agattgtaaa 840
 39 tgggtcaatac tgactttttt tttattccct tgactcaaga cagctaactt cattttcaga 900
 40 actgttttaa acccttgtgt gctggtttat aaaataatgt gtgtaatcct tgttgctttc 960
 41 ctgataccag actgtttccc gtggttggtt agaataatatt ttgttttgat gtttatattg 1020
 42 gcatgttttag atgtcagggt tagtcttctg aagatgaagt tcagccattt tgtatcaaac 1080
 43 agcacaagca gtgtctgtca ctttccatgc ataaagttaa gtgagatggt atatgtaaga 1140
 44 tctgatttgc tagttcttcc ttgtagagtt ataaatggaa agattacact atctgattaa 1200
 45 tagtttcttc atactctgca tataatttgt ggctgcagaa tattgtaatt tgttgacac 1260
 46 tatgtaacaa acaactgaa gatatgttta ataaatattg tacttatttg aagtaaaaaa 1320
 47 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1380
 48 aaaaaaaaaa aaaaaaaaaa aaaaaa 1405

50 <210> SEQ ID NO: 2
 51 <211> LENGTH: 173
 52 <212> TYPE: PRT
 53 <213> ORGANISM: Homo sapiens
 55 <400> SEQUENCE: 2

ENTERED

p.6

RAW SEQUENCE LISTING

DATE: 07/25/2003

PATENT APPLICATION: US/09/820,003C

TIME: 14:45:29

Input Set : A:\1196 3RD SUBST SEQLIST 20030718.TXT

Output Set: N:\CRF4\07252003\I820003C.raw

```

56 Met Ser Ser Met Asn Pro Glu Tyr Asp Tyr Leu Phe Lys Leu Leu Leu
57 1 5 10 15
58 Ile Gly Asp Ser Gly Val Gly Lys Ser Cys Leu Leu Leu Arg Phe Ala
59 20 25 30
60 Asp Asp Thr Tyr Thr Glu Ser Tyr Ile Ser Thr Ile Gly Val Asp Phe
61 35 40 45
62 Lys Ile Arg Thr Ile Glu Leu Asp Gly Lys Thr Ile Lys Leu Gln Ile
63 50 55 60
64 Glu Ser Phe Asn Asn Val Lys Gln Trp Leu Gln Glu Ile Asp Arg Tyr
65 65 70 75 80
66 Ala Ser Glu Asn Val Asn Lys Leu Leu Val Gly Asn Lys Cys Asp Leu
67 85 90 95
68 Thr Thr Lys Lys Val Val Asp Tyr Thr Thr Ala Lys Glu Phe Ala Asp
69 100 105 110
70 Ser Leu Gly Ile Pro Phe Leu Glu Thr Ser Ala Lys Asn Ala Thr Asn
71 115 120 125
72 Val Glu Gln Ser Phe Met Thr Met Ala Ala Glu Ile Lys Lys Arg Met
73 130 135 140
74 Gly Pro Gly Ala Thr Ala Gly Gly Ala Glu Lys Ser Asn Val Lys Ile
75 145 150 155 160
76 Gln Ser Thr Pro Val Lys Gln Ser Gly Gly Gly Cys Cys
77 165 170
80 <210> SEQ ID NO: 3
81 <211> LENGTH: 46050
82 <212> TYPE: DNA
83 <213> ORGANISM: Homo sapiens
85 <220> FEATURE:
86 <221> NAME/KEY: misc_feature
87 <222> LOCATION: (1)...(46050)
88 <223> OTHER INFORMATION: n = A,T,C or G
90 <400> SEQUENCE: 3
91 ttttgggtgt gtgtgtgtgt gtgtgtgtgt gtgcctttac tagtgactca ggtcacagtt 60
92 ttctgagatt ttttttctcc cctcaagaca gaatcttgct ctgtcgccca ggctggagtg 120
93 cagtggcctc tcggcccaact gtagcctccg cctcccgggt tcaagcaatt ttctgcctc 180
94 agcctcccga gtagctggga ttacaggcac gcgccacat gcctggctaa ttttgtatt 240
95 tttagtagag acagtgtttc accatgttgg ccaggctggg cttgaattcc tgacctcgtg 300
96 atctgtccgt tttggcctct caaattcctg agattacagg catgagccac cgagcctggc 360
97 cagttttctg agtttttatt tgaatcaaaa ataagctttt tttttttttt taatgggctt 420
98 tagagtccag ggtaacgaac acttttttgt gcctattact gaaccattca gggatttctt 480
99 ggggtgggtga ccgtgttcat ttcagaaacc aacatgttca tttcagaaac caaactcggg 540
100 taacttttga taagtctcat aactaaggcc catggcagaa tttgagggct aaggggtgta 600
101 attagtgtat gggtagaaat aagtgccttc tttctatatt ttggcgttgt aggaatttaa 660
102 agtgattctg cagtaagtct caggagacaa ttttcttagt tcttagaagt tggaagataa 720
103 actttggaca atgtattaca ctatgccctt tgtaattaaa taactcaaga taatgtgtta 780
104 aagtttagcg gagatttaaa ttcttgagct gattaaagag agctgttaag gccataggtt 840
105 ttttaaaaat gagttaatat tactcccaga aattgtaggc actatatagt gatgaattgc 900
106 atatttttat tgcttattat tttccagtct tgcagaatgg ctcagggtta gtagcaacta 960
107 aaagataata cattacaatt caacctgaag gccgggacga aggtagggaat tggatttttag 1020
108 gctggctctg ggctgtgtcc ctcccatcca tgggatgtgg agccattgaa ggttgtgggg 1080

```

RAW SEQUENCE LISTING

DATE: 07/25/2003

PATENT APPLICATION: US/09/820,003C

TIME: 14:45:29

Input Set : A:\1196 3RD SUBST SEQLIST 20030718.TXT

Output Set: N:\CRF4\07252003\I820003C.raw

```

109 tcacgatgca ggtgctgtct cagaaagata catccgactg tgtgtgcaaa tgggctgggg 1140
110 cggagaagag agagagaggt agagtccatt tggagactac tgcaatagcc aggctgacga 1200
111 gttaagagcg gggcacagta agaatgggaa gaaatctaag aagaaaatgg tagtgcgcg 1260
112 ggccaacaat ggacgatgac cgaaccaggg tggggatggg tgagtgcga gaagaaccgc 1320
113 tccgtgccgt ccaggagacc ccttgacttc ccttctgttc ttagagcgga cgtcctccta 1380
114 ccagccccc accagcgcca ccagggtggc gcaagcctca agctggtcag gtcagcaaca 1440
115 gccgcaacgg aggcaggagc cgacacgctc gtaccccgcc cccctccccg ccccgccacc 1500
116 cccggcagtc cctccggttt gaccactccc cccggtccct tgcctcccc gacccccagc 1560
117 ctccgtcgcc cgccggcacc accctccgcc cctctccgcc ccctcccccg tggggcgctg 1620
118 actcgcccg ctgccacgct tcaactgatga catcactagg gcagctcgcc cttagccaat 1680
119 ccgccagggg gagtccgagc gaagtcctag ccagcgagtc agaggggagg ggagcaggga 1740
120 ggggcccagg gtggggaggt gagggagtg ggaatggggc gggcgacaac ccttcaggta 1800
121 cgactgcccc agaggcgcg cgcttgccgg gaagctgagt cctggccttg cgtcgactg 1860
122 tctgtcctca gctcgctag ccgcgctcgc gactcccttt cccggcatgc caggcggtgc 1920
123 ggccgccctc tgggcccgtg aaaggccctt cgggtctaagg cttccctatt tccctggttcg 1980
124 ccggcggcca ttttgggtgg aagcgatagc tgagtggcg cggtcgtga ttgtgttcta 2040
125 ggggacggag taggggaaga cgtttgcctt cccggaacag cctatctcat tcccttcttt 2100
126 cgattacccg tggcgcgagg agtcaggggc gcggctgcgg cagcaagggc ggcggtggcg 2160
127 gcggcgagg ctgcagtgc atgtccagca tgaatccga atagtgagtt caggagagca 2220
128 ccggtcggct gggtcctgg gccagcttg gggatcttaa aggggtcgag gaggttggg 2280
129 gcagaagtcg gggcatcgcc tggggtgagg cgagggtgat gggtcaggag aggttggcg 2340
130 ccgggagtcg ggccccattg tctgacgcgg aggggcccgc gcgcggggga ggggtcgggc 2400
131 cggaggggtg agccgcccgg gcctggaccg ggtcaggtta gagggcctga ctgcggggcg 2460
132 ggtgctgagg aagcctgccg aggggccttg ggcggtgtga aggggtatct tctctcgga 2520
133 gcagtgaatt ttgaaggagg acttgtctct aaggggaggg gatggggtgg gagagccctt 2580
134 cttagaggga ctgtcagacc ctgcgccgcg actctgcgga gctgtcagga tcttcgggt 2640
135 agaaaccagc tttacttgta aatctgagc ttgttgggtc tctctccttc catcctcccc 2700
136 gccaggtttc aggtaatatg gatgcttttc gggactgcgt gggattgagg ggaatgagta 2760
137 gatggtgaga agcaactgaa catttattag ttctcttttt gagttgtgtc ttggaggagt 2820
138 tgtttaagag ctgcgcgggt ccattgccct cctataaaaa cctgggcatt tgtgagaatt 2880
139 ttgttttttt tttttttaa gagcacacct aagtcatttt gtcttctgtg ggtcaaggga 2940
140 aaaaaaaaaa actaaagcca agaatgtct ttttgatact cgcagattaa aggaagcttg 3000
141 ctgtcaagtt gaaagagaaa cgaacgggac ctatgataga tctgtatgta ggttttggat 3060
142 tacctgcttg gatgcttgca gatagggaat gaggttccat gacgtgtcat gaaaagttaa 3120
143 tgcatttctt tttcttgctt actcaagaag tcaccacagc agatgtgaca cacctggcac 3180
144 ctttcctggg aactggtgtt cacttccctt gggtagagtt tgttgggctc tctcaatgg 3240
145 ccctttaaaa atttctctta cagtttacat gcatgtaaa taatgaataa ttggaagaga 3300
146 ccgaattggt attccttttc agtgtcaaa gcctttgagg gatgggggaa aatcagtatt 3360
147 tgttgtaaaa gttgagttta tttgctggtt tgggtcaatta ctgctagaca ttttccccta 3420
148 aaaggtccac ccaccagttt agctgactgt catatgtgtg tcacatggct cttgcaaaat 3480
149 gcttacaagt tttgtaatat tgtggcttga agctgaaatc ttttgacta aacagaaacc 3540
150 gtagtatttt attagaattt catgctttag aagttgaggg tagtgttctt gtagtgacat 3600
151 ttgctgtgtt gacagtttaa aaaaattttt ttttcaagg ctccaaggac aaagttggtt 3660
152 ttgcacagtt gaacggagg gtacttgagg ttcttaattt agtagttttc ttggaacaa 3720
153 taaagaacat ggatttactg ctttatcgag gtttatagac ctctactgtt caggaaattt 3780
154 tctgaatttg ctatatatat gtttattagt gtaataaat cttcaagatt agttgagaac 3840
155 tttgacaagt tactcagcct ctgaattttt tttccctttt gtaaaatagg ataattggag 3900
156 tcattattcc tgtcagggtg gtggtgaaat tcaaatgtat ataaaagaat ttgaaaaact 3960
157 gtgtgagcat tcttcagggt gtatgcatca ttttcatgaa aggcattcta ttagtaccag 4020

```

RAW SEQUENCE LISTING

DATE: 07/25/2003

PATENT APPLICATION: US/09/820,003C

TIME: 14:45:29

Input Set : A:\1196 3RD SUBST SEQLIST 20030718.TXT

Output Set: N:\CRF4\07252003\I820003C.raw

```

158 gatttaggaa tataatcctt gcgcttaaga agtttagata taggccaggc gcggtggctc 4080
159 acctcagtaa tcccagcact ttgggaggcc gaggcggcg gatcccgagg tcaggagatc 4140
160 gagaccatcc tcggtaacac ggtgaaaccc cgtctctact aaaaatgcaa aaaaattagc 4200
161 cgggcgtggg ggtgggcacc tgtagtccca gctactcgag aggctgaggc aggagaatgg 4260
162 cgtgatcccg ggaggtggag cttgcagtga accaagatct ggccactgca ctccagcctg 4320
163 gacgacagag caagactccg tctcaaaaaa aaaattatatt attgttttga gacggagttt 4380
164 caatcttggt gccaggctg gagtgcaatg gcgcaaatct cctctcaccg ccacctccgc 4440
165 ctcttgggtt caagtgttc tcctgcctca gattcccag aagttgggat tacaggcatg 4500
166 tgccaccact ccggtctaatt tttgtatttt tggtagagac ggggtttctc catgttggtc 4560
167 aggtctgtct caaactcccg aagtgtccg ccgcctcag ctcccaaag tgttgggatt 4620
168 acaggcgtga gccaccgcgc ccggcagaaa tagattttat acatgtcaaa taccagtaga 4680
169 tatagcaaat tccagatgtg tggcatggat gagagcaaca agatttcagg gggatgggtg 4740
170 gttgtggttg gctatctggg ttttggaaga ctttatagaa gagagacctg aaagggattt 4800
171 atcagcaatt agatttggag gaacagaggg agtgactagg aattttcaag ggggagaaga 4860
172 aggaggaatg gctcataaat gacaaggaca gtaataagta aatacgggtg caaatcatcc 4920
173 tttcttttga agactaatga cctcaaaggg atcaaaccga gaaacagttt ttatatattt 4980
174 tctgggatca aatacatggg tatctggcct actatatattg tattctagac tgtttagtaa 5040
175 aataatacag gaatttgaga aaacctttgc aaaagtgtta gtgaaaatta cttagggtga 5100
176 aggaagtga gggatatttt attaggggag gtcacaaggg cagtggagca tcagattttt 5160
177 agtaatctga cttaagcagt ttctttttgt tttaatgaag cttgttatct ttataaaagt 5220
178 aattagagaa aatttggaaa ataaaggaaa gaaagaaaag ttcttttagt ttttatcacg 5280
179 caaatacaag ctcatctgtt tttaacatct tgttccaaac tccaaagtct tgctttctct 5340
180 tcaattaaaa cttaaatggg tggatgcttt tcctgcttcc agtatgttat cttaataact 5400
181 aacaatggta tattagctaa tgtttacaaa tgtactccag atgttcctta agttactttg 5460
182 gtttatcatt accaatttat attgtttctt ttagaatttt ataactttt ttaattgggt 5520
183 ctgctaaatt tggtagtgaa aatgggatct tgagaaaaaa gattctgaag caacagaatt 5580
184 tttagattta tattggttt cataagagtt ggtagctgta ttactttttt tgtttgtttt 5640
185 gttttttttt tgagacggaa tcttgctctg tcgcccaggc cttggcctcc caaagtgttg 5700
186 ggattacagg cgtgagccac tgtgcctggc tgtttgtgtt tttttttgtt tttgttttct 5760
187 tttctttttc tttttttcga gatggagtct cactctgtca ccagggtcg agtgacgttg 5820
188 cgcgatcttg gctcactgca atctctgcct cctgggttca agcgattttc ctgccttggt 5880
189 ctcttgagta gctgggatta caggcatttg ccaccataac cagctaattt ttgtatagag 5940
190 taccagcca tctctaattg tgatcaggct gaagcagggt gatcacctaa ggtcaggagt 6000
191 tcaagaccag cctggccaat atggcaaac cctatctcta ctaatacaga aaattatctg 6060
192 ggtgtgttg ctggcgctg taatcccagc tactcgggag gctgaggcag gacaatctct 6120
193 tgaacctcg aggtggaggt tgcagtgcac cgagatcaca ccattgcact ccagcctggg 6180
194 caacagagca agacttgtct caaaaaaaaaa aaaaaaaaaa aaaaaaaggc aattgaaagt 6240
195 gtaatctgaa cagttaaaaa agtagataga aagggttaaa gctttttttt gaggatctga 6300
196 agaaaaatgt ggattttttt tgagctacgt ttgaaagcag gcagtgatta tttcagcaca 6360
197 ttaagaaatg cttaacatgg ccaggcgagc tggctcacgc ctgtaattct cagcactttg 6420
198 ggaggccgag gtggcggtat catttgaggt catgaccagc ctggccaaca tgatgagaca 6480
199 ctgcctctac taaaaataca aaaattagct ggggtgtgtg gtgcacgcct gtaattccag 6540
200 ctactcagga acctgaggca ggagagtcac ttgaacctgg gaggcggagg ctgcagtgcg 6600
201 tccagatcat gccactgcac tccagcctga gggacagagt gagactcctc aaaaaaaaaa 6660
202 aaaaaaaaaa aaagaaatac ttaacattat tctcgtgatt attctcataa catttttcat 6720
203 aatccactgg cttccagtgg atttttttag tgtcaagaaa ataattttga ttggttcac 6780
204 ttttaaggaat gtgttaagaa taaagcatgt ctacctgtct tcagtatacc agctaactat 6840
205 agtaggaaga aatatagtag tctacttaga tcaactataa ttctttaatg cagaaaaagt 6900
206 ttaaagtatt taccttattt ttagccccc tcccttaag tatatcatgg ctccagaatc 6960

```

RAW SEQUENCE LISTING

DATE: 07/25/2003

PATENT APPLICATION: US/09/820,003C

TIME: 14:45:29

Input Set : A:\1196 3RD SUBST SEQLIST 20030718.TXT

Output Set: N:\CRF4\07252003\I820003C.raw

```

207 tctgaaaatg ttatcagctt ttcagacttt gctcttcttt catgttatac tcaagaaaca 7020
208 tttgaccttt tttttttttt ttttgcttgc attgtgtttc aaataatttt taacaaaact 7080
209 taagtgtttg aaagtgaaag caggttgtct ttgtgacttt tgggtggtgg ttgaaaaact 7140
210 cagaaaagtt taaagaagaa agataactag tattctcatt gtccagaata tgatttttta 7200
211 aatgtctata gaatatcacc atctgtaatt cttccggtaa ttaagtatt cagtagttgt 7260
212 ataaaacctt taaaatatat atattgagaa ttttgtgtga atgagatgat gagataatct 7320
213 tgtaggatca tttaaagata agaactgagg cctggcacag tggctcatgc ctataatcac 7380
214 agcactttgg gagggccagg cggtagatca cctgagggtc ggagtttgag accagcctgg 7440
215 ccaacatggc aaaaccctgt ctctactaag catagaaaaa ttaattgggt gtggctcgtc 7500
216 ctgctgttag tcccagctgc ttgggaagct gaggcgggag aatctcttga accctggagg 7560
217 tgggcattgc agtgagctga gattgcgcca ctgactcca gcctgggcga cagagcaaga 7620
218 ctctgtctca aaataaagta aaataaaatg aagataacaa ctgaaatttc acattaaaaa 7680
219 tttttttgta gcgactgtgc ctctatgtt gtgcaggctg gtctcaaact cctggcctca 7740
220 agcgatcctt ccaaagcact ggggtgggcca ccatgtccag cctgaaattt tgcattaaaa 7800
221 aatttcccgc ttttggctgg gcgaggtgtc tcacgcctgt aatagcagtt tgggaggccg 7860
222 aggcaggcag atcacttgag gtcagttcta gaccggcctg gccaatgtgg tgaaaccctg 7920
223 cctctactaa aaacaccaa ttagctaggc gtggtggtgt gcgctttag tcccaagcta 7980
224 ctgaggaggc tgagacaaga gaatcgcttg aatctgggaa aaagaggttg ccgtgagcca 8040
225 agattggcca ctgcactcca gcctgggtga cagagtga tctgtctca aaaaaataaa 8100
226 aaataaaaaat ttccccctt atcaaaatta agttaaaatg agggatgtta gacagttttt 8160
227 aaccatcaaa tatttttagt tagttttttt ttttaacgt tgtcttaaag atggaagtgc 8220
228 ttcaaaatca aatcttcctt gccagttctc tacttggtt cttttttttt ctttttgaga 8280
229 tagagtctca ctttgtcact ggagtgctgt ggcgtgatct cggctcactg caacctccg 8340
230 cttccagggt taagtgattc ttccacctca gcctctcaag tagctgggag tacagggtgtg 8400
231 tgccaccaca cccggcta tttttagatt ttagtagaga cagggtttca ctatgttggc 8460
232 caggctggcc tcaaaactct gacctcgtga tccaccacc tcagccaaat tgcgtggatt 8520
233 acttgtgtga gccacgcgcc tggctctac ttggtttta aagggaattt tgctttctga 8580
234 gtaattttat ttctcaggta tcttggctt ttaattctg gaagcaatct taataattta 8640
235 tgtatgtgcc ctgtaatccc agcactttgg gaggccgagg tgggcgaatc acgaggtcag 8700
236 gagatcgaga ccattcctggc taacacgggtg aaaccccatc tactaaaaat acaaaaaatt 8760
W--> 237 agctgggctg ggtggcaggc gcctgtagtc ccagctactt nnnnnnnnnn nnnnnnnnnn 8820
238 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 8880
239 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 8940
240 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 9000
241 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 9060
242 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 9120
243 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 9180
244 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 9240
245 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 9300
246 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 9360
247 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 9420
248 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 9480
249 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 9540
250 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 9600
251 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 9660
252 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 9720
253 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 9780
254 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 9840
255 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 9900

```

RAW SEQUENCE LISTING ERROR SUMMARY
PATENT APPLICATION: US/09/820,003C

DATE: 07/25/2003
TIME: 14:45:30

Input Set : A:\1196 3RD SUBST SEQLIST 20030718.TXT
Output Set: N:\CRF4\07252003\I820003C.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:3; N Pos. 8801,8802,8803,8804,8805,8806,8807,8808,8809,8810,8811,8812
Seq#:3; N Pos. 8813,8814,8815,8816,8817,8818,8819,8820,8821,8822,8823,8824
Seq#:3; N Pos. 8825,8826,8827,8828,8829,8830,8831,8832,8833,8834,8835,8836
Seq#:3; N Pos. 8837,8838,8839,8840,8841,8842,8843,8844,8845,8846,8847,8848
Seq#:3; N Pos. 8849,8850,8851,8852,8853,8854,8855,8856,8857,8858,8859,8860
Seq#:3; N Pos. 8861,8862,8863,8864,8865,8866,8867,8868,8869,8870,8871,8872
Seq#:3; N Pos. 8873,8874,8875,8876,8877,8878,8879,8880,8881,8882,8883,8884
Seq#:3; N Pos. 8885,8886,8887,8888,8889,8890,8891,8892,8893,8894,8895,8896
Seq#:3; N Pos. 8897,8898,8899,8900,8901,8902,8903,8904,8905,8906,8907,8908
Seq#:3; N Pos. 8909,8910,8911,8912,8913,8914,8915,8916,8917,8918,8919,8920
Seq#:3; N Pos. 8921,8922,8923,8924,8925,8926,8927,8928,8929,8930,8931,8932
Seq#:3; N Pos. 8933,8934,8935,8936,8937,8938,8939,8940,8941,8942,8943,8944
Seq#:3; N Pos. 8945,8946,8947,8948,8949,8950,8951,8952,8953,8954,8955,8956
Seq#:3; N Pos. 8957,8958,8959,8960,8961,8962,8963,8964,8965,8966,8967,8968
Seq#:3; N Pos. 8969,8970,8971,8972,8973,8974,8975,8976,8977,8978,8979,8980
Seq#:3; N Pos. 8981,8982,8983,8984,8985,8986,8987,8988,8989,8990,8991,8992
Seq#:3; N Pos. 8993,8994,8995,8996,8997,8998,8999,9000,9001,9002,9003,9004
Seq#:3; N Pos. 9005,9006,9007,9008,9009,9010,9011,9012,9013,9014,9015,9016
Seq#:3; N Pos. 9017,9018,9019,9020,9021,9022,9023,9024,9025,9026,9027,9028
Seq#:3; N Pos. 9029,9030,9031,9032,9033,9034,9035,9036,9037,9038,9039,9040
Seq#:3; N Pos. 9041,9042,9043,9044,9045,9046,9047,9048,9049,9050,9051,9052
Seq#:3; N Pos. 9053,9054,9055,9056,9057,9058,9059,9060,9061,9062,9063,9064
Seq#:3; N Pos. 9065,9066,9067,9068,9069,9070,9071,9072,9073,9074,9075,9076
Seq#:3; N Pos. 9077,9078,9079,9080,9081,9082,9083,9084,9085,9086,9087,9088
Seq#:3; N Pos. 9089,9090,9091,9092,9093,9094,9095,9096,9097,9098,9099,9100
Seq#:3; N Pos. 9101,9102,9103,9104,9105,9106,9107,9108,9109,9110,9111,9112
Seq#:3; N Pos. 9113,9114,9115,9116,9117,9118,9119,9120,9121,9122,9123,9124
Seq#:3; N Pos. 9125,9126,9127,9128,9129,9130,9131,9132,9133,9134,9135,9136
Seq#:3; N Pos. 9137,9138,9139,9140,9141,9142,9143,9144,9145,9146,9147,9148
Seq#:3; N Pos. 9149,9150,9151,9152,9153,9154,9155,9156,9157,9158,9159,9160
Seq#:3; N Pos. 9161,9162,9163,9164,9165,9166,9167,9168,9169,9170,9171,9172
Seq#:3; N Pos. 9173,9174,9175,9176,9177,9178,9179,9180,9181,9182,9183,9184
Seq#:3; N Pos. 9185,9186,9187,9188,9189,9190,9191,9192,9193,9194,9195,9196
Seq#:3; N Pos. 9197,9198,9199,9200,9201,9202,9203,9204,9205,9206,9207,9208
Seq#:3; N Pos. 9209,9210,9211,9212,9213,9214,9215,9216,9217,9218,9219,9220
Seq#:3; N Pos. 9221,9222,9223,9224,9225,9226,9227,9228,9229,9230,9231,9232
Seq#:3; N Pos. 9233,9234,9235,9236,9237,9238,9239,9240,9241,9242,9243,9244
Seq#:3; N Pos. 9245,9246,9247,9248,9249,9250,9251,9252,9253,9254,9255,9256
Seq#:3; N Pos. 9257,9258,9259,9260,9261,9262,9263,9264,9265,9266,9267,9268
Seq#:3; N Pos. 9269,9270,9271,9272,9273,9274,9275,9276,9277,9278,9279,9280
Seq#:3; N Pos. 9281,9282,9283,9284,9285,9286,9287,9288,9289,9290,9291,9292
Seq#:3; N Pos. 9293,9294,9295,9296,9297,9298,9299,9300,9301,9302,9303,9304
Seq#:3; N Pos. 9305,9306,9307,9308,9309,9310,9311,9312,9313,9314,9315,9316
Seq#:3; N Pos. 9317,9318,9319,9320,9321,9322,9323,9324,9325,9326,9327,9328

RAW SEQUENCE LISTING ERROR SUMMARY
PATENT APPLICATION: US/09/820,003C

DATE: 07/25/2003
TIME: 14:45:30

Input Set : A:\1196 3RD SUBST SEQLIST 20030718.TXT
Output Set: N:\CRF4\07252003\I820003C.raw

Seq#:3; N Pos. 9329,9330,9331,9332,9333,9334,9335,9336,9337,9338,9339,9340
Seq#:3; N Pos. 9341,9342,9343,9344,9345,9346,9347,9348,9349,9350,9351,9352
Seq#:3; N Pos. 9353,9354,9355,9356,9357,9358,9359,9360,9361,9362,9363,9364
Seq#:3; N Pos. 9365,9366,9367,9368,9369,9370,9371,9372,9373,9374,9375,9376
Seq#:3; N Pos. 9377,9378,9379,9380,9381,9382,9383,9384,9385,9386,9387,9388
Seq#:3; N Pos. 9389,9390,9391,9392,9393,9394,9395,9396,9397,9398,9399,9400
Seq#:3; N Pos. 9401,9402,9403,9404,9405,9406,9407,9408,9409,9410,9411,9412

VERIFICATION SUMMARY

DATE: 07/25/2003

PATENT APPLICATION: US/09/820,003C

TIME: 14:45:30

Input Set : A:\1196 3RD SUBST SEQLIST 20030718.TXT

Output Set: N:\CRF4\07252003\I820003C.raw

L:237 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:8760

M:341 Repeated in SeqNo=3

L:1509 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:41 after pos.:0

L:1534 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:43 after pos.:0

L:1549 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:44 after pos.:0

L:1564 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45 after pos.:0